



SLOVENSKI STANDARD
oSIST prEN 50365:2021
01-januar-2021

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SIST EN 50365:2002

Delo pod napetostjo - Elektroizolacijske čelade za delo na nizko- in srednjenapetostnih inštalacijah

Live Working - Electrically insulating helmets for use on low and medium voltage installations

Elektrisch isolierende Helme für Arbeiten an Niederspannungsanlagen

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Casques électriquement isolants pour utilisation sur installations à basse tension

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Ta slovenski standard je istoveten z: prEN 50365

ICS:

13.260	Varstvo pred električnim udarom. Delo pod napetostjo	Protection against electric shock. Live working
13.340.20	Varovalna oprema za glavo	Head protective equipment

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NORME EUROPÉENNE
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DRAFT
prEN 50365

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ICS

Will supersede EN 50365:2002 and all of its amendments and corrigenda (if any)

English Version

Live Working - Electrically insulating helmets for use on low and medium voltage installations

Casques électriquement isolants pour utilisation sur installations à basse tension

Elektrisch isolierende Helme für Arbeiten an Niederspannungsanlagen

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2021-02-05.

It has been drawn up by CLC/TC 78.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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31	of 9 March 2016 on personal protective equipment and repealing Council Directive	
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35 **European foreword**

36 This document (EN 50365:2020) has been prepared by CLC/TC 78 "Equipment and tools for live working".

37 The following dates are fixed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or

38 This document will supersede EN 50365:2002.

39 EN 50365:2020 includes the following significant technical changes with respect to EN 50365:2002

- 40 ▪ Change of scope to test helmets up to electrical Class 2
- 41 ▪ Update on normative references
- 42 ▪ Definitions for *Brim and Crown*
- 43 ▪ Helmet design types Type 1 and 2
- 44 ▪ Additional marking required for voltage AC or AC/DC and design type
- 45 ▪ DC requirements and testing
- 46 ▪ Routine testing for all AC or AC/DC helmets
- 47 ▪ Removal of air hole design

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prEN 50365:2020 (E)48 **1 Scope**

49 This document specifies the requirements and testing for *electrically insulating helmets* that provide head
50 protection of the worker against electric shock used for working live or close to live parts on installations
51 not exceeding 17 000 V AC or 1 500 V DC

52 The products designed and manufactured according to this document contribute to the safety of the users
53 provided they are used by skilled persons, in accordance with safe methods of work and the instructions
54 for use.

55 This document does not cover arc flash or additional helmet accessories such as face shields, ear
56 defenders, lamps and devices for indicating the presence of voltage.

57 **2 Normative references**

58 The following documents are referred to in the text in such a way that some or all of their content constitutes
59 requirements of this document. For dated references, only the edition cited applies. For undated references,
60 the latest edition of the referenced document (including any amendments) applies..

61 EN 397:2012+A1:2012, *Industrial safety helmets*

62 EN 443:2008, *Helmets for fire fighting in buildings and other structures*

63 EN 14052:2012+A1:2012, *High performance industrial helmets*

64 EN 60060-2:2011, *High-voltage test techniques - Part 2: Measuring systems (IEC 60062-2:)*

65 EN 61318:2008, *Live working - Conformity assessment applicable to tools, devices and equipment*

66 ISO 6344-1:1998, *Coated abrasives - Grain size analysis - Part 1: Grain size distribution test*

67 **3 Terms and definitions**

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68 For the purposes of the present document the following terms and definitions apply.

69 ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- 70 • ISO Online browsing platform: available at <https://www.iso.org/obp>
- 71 • IEC Electropedia: available at <http://www.electropedia.org/>

72 **3.1**73 **brim**

74 rim surrounding the shell

75 [SOURCE: ISO 3873:1977,3.4]

76 **3.2**77 **crown**

78 portion of the helmet that covers the head above the reference plane

79 [SOURCE: ISO/TR 19591:2018, 3,70]

80 **3.3**81 **electrically insulating helmet**

82 safety helmet which protects the wearer against electrical shocks by preventing the passage of dangerous
83 current through the body via the head

84 **3.4**85 **proof test voltage**

86 specified value of voltage that is applied to a device, item or component for the time defined under specified
87 conditions to ensure that the electrical strength of the insulation is above a specified value

88 **3.5**89 **routine test**

90 conformity test made on each individual item during or after manufacture

91 [SOURCE IEC 60050-151: 2001, 151-16-17]

92 **3.6**93 **sampling test**

94 test performed on a number of devices taken at a random from a batch

95 [SOURCE IEC 60050-151: 2001, 151-16-20]

96 **3.7**97 **type test**

98 test performed on one or more devices made to a certain design to show that the design meets certain
99 specifications

100 [SOURCE IEC 60050-151: 2001, 151-16-16]

101 **3.8**102 **shell**

103 hard, smoothly finished material that provides the general outer form of the helmet

104 [SOURCE: EN 397:2012, 3.2]

105 **3.9**106 **withstand test voltage**

107 specified value of voltage that a device, item or component must withstand without flashover, disruptive
108 discharge, puncture or other electric failure when that value of voltage is applied under specified conditions

109 **4 Requirements**110 **4.1 General**

111 *Electrically insulating helmets* shall fulfil the following requirements.

112 **4.2 Non-electrical requirements**113 **4.2.1 General**

114 *Electrically insulating helmets* shall fulfil the non-electrical requirements of EN 397:2012+A1: 2012 or
115 EN 443:2008 or EN 14052:2012+A1:2012. The applicable non-electrical requirements will not conflict with
116 the electrical requirements and tests.

117 **4.2.2 Helmet Design**

118 *Electrically insulating helmets* shall not consist of conductive parts or material (see 6.2.1) and have no
119 aperture that affects the electrical insulating properties.

120 *Electrically insulating helmets* used on or near electrical installations shall be classified in by design to
121 protect the *crown* area of the head.

122 Type 1 – With a full *brim* greater than 30 mm at any point. (Figure 1)

123 Type 2 – Peak cap and no *brim* (Figure 2)



124

125

Figure 1 — Type 1 helmet design



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127

Figure 2 — Type 2 helmet designs

128 4.3 Electrical requirements [oSIST prEN 50365:2021](https://standards.iteh.ai/catalog/standards/sist/d588eba8-dd61-4468-a53b-4ea16c6daba8/osist-pren-50365-2021)

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129 4.3.1 General

130 Electrically insulating helmet shell shall pass, for AC use, an AC proof voltage test and an AC withstand
131 voltage test according to 5.3.4 and 5.3.5 and, for AC/DC use, an AC proof voltage test, an AC withstand
132 voltage test and a DC proof voltage test according to 5.3.4, 5.3.5 and 5.3.6.

133 4.3.2 Electrical Classification

134 *Electrically insulating helmets* used on or near electrical installations shall be classified in:

- 135 — electrical class 00 for installations with a maximum use voltage up to 500 V AC and 750 V DC;
- 136 — electrical class 0 for installations with a maximum use voltage up to 1 000 V AC and 1 500 V DC;
- 137 — electrical class 1 for installations with a maximum use voltage up to 7 500 V AC.
- 138 — electrical class 2 for installations with a maximum use voltage up to 17 000 V AC.

139 4.4 Marking

140 4.4.1 General

141 The *electrically insulating helmet* shall be first marked according to EN 397:2012+A1:2012 or EN 443:2008
142 or EN 14052:2012+A1:2012 for the non-electrical marking.

143 Additional marking to comply with this standard shall be the following.

144 Each *electrically insulating helmet* which claims to comply with the requirements of this standard, shall bear
145 a label and/or marking giving the following information:

146 — symbol IEC 60417-5216:2002:10 – suitable for live working: double triangle (See Annex A);

147 NOTE The exact ratio of the height of the figure to the base of the triangle is 1,43. For the purpose of convenience, this
148 ratio can be between the values of 1,4 and 1,5.

149 — number of EN 50365:2020 standard immediately adjacent to the symbol;

150 — electrical class;

151 — voltage current tested “AC” or “AC/DC” according to voltage testing applied;

152 — design Type 1 or Type 2;

153 — serial or batch number;

154 — month and year of manufacture.

155 In addition, each unit of *electrically insulating helmets* shall have a strip or space to note the date of first
156 use, the date of examination or the date of each periodic inspection. This shall be located near the IEC
157 symbol.

158 The marking shall be durable, clearly legible on the bottom of the helmet shell peak or a visible area on the
159 internal or external surface and shall not impair its quality.

160 An example of marking is given in Annex B.

161 4.4.2 Colour code

162 If a colour code is used, the symbol (double triangle) shall be:

163 — Beige for class 00;

164 — Red for class 0;

165 — White for class 1;

166 — Yellow for class 2.

167 4.5 Packaging

168 The type of packaging suitable for transport shall be defined by the manufacturer.

169 The packaging of each *electrically insulating helmet* shall protect the helmet from damage that affect
170 electrical insulating properties.

171 The outside of packaging shall be marked with the name of the manufacturer or supplier, classification, size
172 and design.

173 4.6 Instruction of use

174 Each *electrically insulating helmet* shall be accompanied by the instructions for use, which contain the
175 information necessary for use, maintenance and the potential risk of limited effectiveness of electrical
176 insulation according to conditions of use (i.e. mechanical or chemical aggression). The non-electrical
177 information supplied by the manufacturer shall conform to EN 397:2012+A1:2012, EN 443:2008 or
178 EN 14052:2012+A1:2012

179 The instructions for use shall contain at least:

180 a) explanation of the symbol “double triangle”;

181 b) storage;

182 c) examination before use;

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- 183 d) precaution of use;
- 184 e) periodic inspection;
- 185 f) period of obsolescence;
- 186 g) significance of any markings;
- 187 h) explanation about use of Type 1 and Type 2 helmets;
- 188 Guidance for the use of *electrically insulating helmets* is given in Annex C.

5 Testing**5.1 General**

191 Tests are *type*, *routine* and *sampling tests*.

5.2 Non-electrical type tests

193 The non-electrical type tests of EN 397:2012+A1:2012, EN 443:2008 or EN 14052:2012 shall be performed
194 before the electrical tests.

5.3 Electrical type tests**5.3.1 General**

197 For *type tests*, three *electrically insulating helmet shells* shall be used. A *type test* shall be performed on
198 each helmet.

199 Electrical *type tests* shall be performed in a room where temperature is $23\text{ °C} \pm 2\text{ °C}$ and
200 $50\% \pm 5\%$ relative humidity.

201 Electrical tests shall ~~only be performed on whole helmet shells~~.

202 They shall be performed in the order given by Annex B.

203 Tests arrangements, power sources and procedures shall be in accordance with EN 60060-2: 2011.

204 *Type* and *sampling tests* are destructive, therefore tested helmet *shells* shall be destroyed after the
205 completion of the tests.

206 *Electrically insulating helmet* shell shall be submitted, for AC use, to an AC *proof voltage test* followed by
207 an AC *withstand voltage test* according to 5.3.4 and 5.3.5.

208 For AC/DC use, the *electrically insulating helmet* shell shall be submitted to an AC *proof voltage test*
209 followed by an AC *withstand voltage test* and after to a DC *proof voltage test* according to 5.3.4, 5.3.5 and
210 5.3.6.

5.3.2 Test arrangement

212 The *electrically insulating helmet* shell shall be fixed that the lowest part of the *brim* or the edge is closest
213 to the water level (see Figure 3). Then the tank and the inner side of the shell shall be filled with tap water.
214 The vertical clearance value *d* between the helmet shell *brim* and the level of water shall be the same inside
215 and outside. The clearance value *d* shall be according to Table 1.

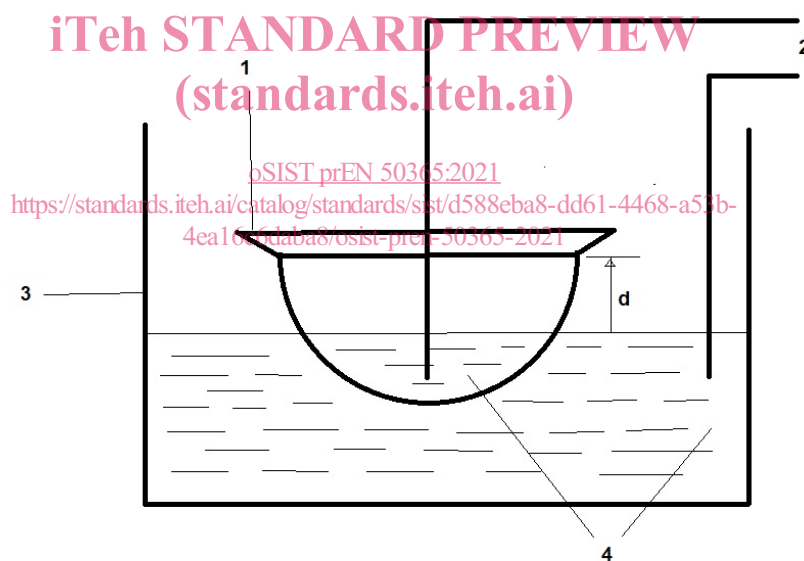
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Table 1 — Clearances in millimetres

Class of Helmet	AC Proof-test d	AC Withstand-test d	DC Proof Test d
00	20	20	40
0	40	40	40
1	40	40	n/a
2	40	40	n/a

n/a = not applicable
Tolerance for the clearance between the open part of the helmet and water line is ± 4 mm

217 The water inside the helmet that forms one electrode shall be connected to one terminal of the voltage
 218 source that dips into the water. The water in the tank outside the helmet that forms the other electrode shall
 219 be connected directly to the other terminal of the voltage source. The water shall be free of air bubbles and
 220 air pockets and the exposed portion of the helmet above the water line shall be dry on the outer surface.



221

222

a) Arrangement for Type 1 helmet